WHAT IS CLAIMED IS:

1. An apparatus for inspecting a surface of an article, the apparatus comprising:

a light source for irradiating a portion of the surface of the article with a light beam at an incident wavelength;

a first detector for receiving light at the incident wavelength from the portion of the surface and generating a first signal;

a second detector for receiving light at a wavelength different from the incident wavelength from the portion of the surface and generating a second signal; and

a processor configured for determining, based on the first and second signals, whether a defect exists on the portion of the surface.

2. The apparatus of claim 1, wherein the light source is a laser for producing laser light at the incident wavelength.

3. The apparatus of claim 2, wherein the laser provides continuous wave laser light or modelocked laser light.

4. The apparatus of claim 2, comprising a scanner for scanning the laser light across the surface of the article from the portion of the surface to another portion of the surface.

5. The apparatus of claim 4, wherein the scanner is for focusing the laser light to a spot and rapidly scanning the spot across the surface of the article.

6. The apparatus of claim 4, wherein the scanner is for focusing the laser light to a line.

7. The apparatus of claim 6, wherein the first and second detectors comprise a linear detector array comprising semiconductor detectors.

8. The apparatus of claim 1, wherein the second detector is for detecting fluorescence from the portion of the surface.

9. The apparatus of claim 1, wherein the second detector is for detecting Raman scattering from the portion of the surface.

10. The apparatus of claim 1, wherein the second detector is for detecting second harmonic generation.

11. The apparatus of claim 1, wherein the first and second detectors comprise photomultipliers.

12. The apparatus of claim 1, comprising a separator disposed between the surface of the article and the first and second detectors, for separating the light from the portion of the surface at the incident wavelength from the light at the other wavelength and directing the light to the first and second detectors.

13. The apparatus of claim 12, wherein the separator comprises a diffraction grating.

14. The apparatus of claim 12, wherein the separator comprises a cylindrical lens.

15. The apparatus of claim 12, wherein the separator comprises a bandpass filter.

16. The apparatus of claim 12, wherein the separator comprises a focusing lens.

17. The apparatus of claim 12, wherein the separator comprises a plurality of dichroic mirrors.

18. The apparatus of claim 12, further comprising an objective lens between the light source and the surface of the article.

19. The apparatus of claim 18, wherein the objective lens is for passing the light from the portion of the surface of the article to the separator.

20. The apparatus of claim 5, wherein the processor is configured to generate a defect map of the surface of the article.

21. An apparatus for inspecting a surface of an article, the apparatus comprising:

a light source for irradiating a portion of the surface of the article with a light beam at an incident wavelength;

a plurality of first detectors for receiving light at the incident wavelength from the portion of the surface and generating first signals;

a plurality of second detectors for receiving light at a wavelength different from the incident wavelength from the portion of the surface and generating second signals; and

a processor configured for determining, based on the first and second signals, whether a defect exists on the portion of the surface.

22. A method for inspecting a surface of an article, the method comprising:

irradiating a portion of the surface of the article with a light beam at an incident wavelength;

receiving light at the incident wavelength from the portion of the surface at a first detector to generate a first signal;

receiving light at a wavelength different from the incident wavelength from the portion of the surface at a second detector to generate a second signal; and

determining whether a defect exists on the portion of the surface based on the first and second signals.

23. The method of claim 22, comprising scanning the light beam across the surface of the article from the portion of the surface to another portion of the surface.

24. The method of claim 23, comprising focusing the light beam to a spot and rapidly scanning the spot across the surface of the article.

25. The method of claim 23, comprising focusing the light beam to a line.

26. The method of claim 22, comprising detecting fluorescence from the portion of the surface with the second detector.

27. The method of claim 22, comprising detecting Raman scattering from the portion of the surface with the second detector.

28. The method of claim 22, comprising detecting second harmonic generation from the portion of the surface with the second detector.

29. The method of claim 22, comprising separating the light from the portion of the surface at the incident wavelength from the light at the other wavelength and directing the light to the first and second detectors.

30. The method of claim 23, further comprising:

irradiating a portion of a reference surface corresponding to the portion of the surface of the article with a light beam at the incident wavelength;

receiving light at the incident wavelength from the portion of the reference surface at the first detector to generate a third signal; and

receiving light at a wavelength different from the incident wavelength from the portion of the reference surface at the second detector to generate a fourth signal;

wherein the determining step comprises determining whether the defect exists further based on the third and fourth signals.

31. The method of claim 30, comprising generating a defect map of the surface of the article based on the first, second, third and fourth signals.

32. The method of claim 30, wherein the determining step comprises determining that the defect exists when the second signal is above a threshold level and the fourth signal is below the threshold level.

33. The method of claim 22, wherein the determining step comprises determining the defect exists when the second signal is a predetermined value, the predetermined value corresponding to a particular wavelength other than the incident wavelength.

34. The method of claim 33, comprising classifying the defect into a predetermined category when the second signal is the predetermined value.